NOTICE

All drawings located at the end of the document.

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FISCAL YEARS 2002 and 2003 STEWARDSHIP SUMMARY

Rocky Flats Environmental Technology Site 10808 Highway 93 Golden, CO 80403-8200

September 30, 2003





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ACRONYMS

ALF Action Level Framework

BZ Buffer Zone

CDPHE Colorado Department of Public Health and Environment

CERCLA Comprehensive Environmental Response, Compensation and Liability Act

CMS Corrective Measure Study

CRA Comprehensive Risk Assessment

DOE US Department of Energy ER Environmental Restoration

ER RSOP Environmental Restoration RFCA Standard Operating Protocol

EPA Environmental Protection Agency

FS Feasibility Study
IA Industrial Area

IHSS Individual Hazardous Substance Site

NFAA No Further Accelerated Action
OPWL Original Process Waste Lines
PAC Potential Area of Concern

RCRA Resource Conservation and Recovery Act

RFCA Rocky Flats Cleanup Agreement

RFETS Rocky Flats Environmental Technology Site

RFI RCRA Facility Investigation
RI Remedial Investigation
SAP Sampling and Analysis Plan
UBC Under Building Contamination

1.0 INTRODUCTION

The U S Department of Energy, Rocky Flats Field Office and its contractors are currently cleaning up and closing the Rocky Flats Environmental Technology Site (RFETS or Site), with oversight and input from regulators and stakeholders. The accelerated actions that have been completed, or which are now planned, will likely not remove all contamination from the Site. Activities related to the long-term management of this contamination form the basis for long-term stewardship at RFETS. This document summarizes stewardship activities proposed as part of the evaluation and/or remediation of Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), and Under Building. Contamination (UBC) sites that were addressed in fiscal years 2002 and 2003. The document has been prepared pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS) Report Work Plan (DOE 2001) and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol for Routine Soil Remediation (ER RSOP) (DOE 2002a)

20 BACKGROUND

RFCA describes the consultation and decision document submittal process that DOE uses to implement accelerated actions or conduct other mitigating actions to address contamination at RFETS RFCA adopted this accelerated action approach to Site cleanup for the reasons described in RFCA paragraph 79

To expedite remedial work and maximize early risk reduction at the Site, the Parties intend to make extensive use of accelerated actions to remove, stabilize, and/or contain Individual Hazardous Substance Sites (IHSSs)

In order to integrate IHSS characterization and accelerated actions with building decommissioning in the Industrial Area (IA) at RFETS, the IA Characterization and Remediation Strategy (DOE 1999) was prepared. As part of the strategy, the 194 IHSSs, PACs, and Under Building Contamination (UBC) sites in the IA were consolidated into 58 IA Groups to enable scheduling of characterization and accelerated action activities in accordance with the decommissioning schedule. In the Buffer Zone (BZ), 34 IHSSs and PACs were consolidated into 8 IHSS Groups for further study. IHSS Groups requiring accelerated actions consisting of routine remediation of soil and associated debris are identified in ER RSOP Notifications that are submitted to the lead regulatory agency. The characterization and accelerated action activities for the various IHSS Groups are documented in Data Summary Reports (accelerated action not required based on an evaluation of the characterization data), and in Closeout Reports (accelerated action taken based on an evaluation)

30 PURPOSE AND SCOPE

In accordance with RFCA, environmental conditions at an IHSS, PAC or UBC site that meet Attachment 5, Sections 4 and 5 criteria are considered protective of human health and the environment for the reasonably anticipated future land use. These environmental conditions include the presence of residual contamination, i.e., the presence of chemical and radiological constituents at concentrations above. Site background levels. Accordingly, long-term stewardship is considered in determining the extent, if any, of accelerated actions at IHSSs. In accordance with the ER RSOP, the stewardship evaluation takes into account potential post-closure actions so that the effectiveness of the action (or no action) will be maintained. The evaluation includes whether remediation should be taken beyond that required to achieve the conditions in RFCA Attachment 5, Sections 4 and 5. The results of the stewardship evaluation for the various IHSS Groups are documented in the Data Summary and Closeout Reports. These IHSS groups are then proposed for No Further Accelerated Action (NFAA), and in many cases, the NFAA proposals have been approved by the regulatory agencies. This FY02/03 Stewardship Summary

provides, in a single document, a summary of all proposed stewardship activities that are identified in the Data Summary and Closeout reports that were prepared for IHSS groups in FY02/03. Also summarized herein, are stewardship activities proposed for IHSSs that were evaluated for NFAA based on historical data, i.e., collection of additional characterization data was not required because of the adequacy of the existing data.

4 0 IHSSs DISPOSITIONED IN FY02/03

In FY02/03, numerous IHSS Groups were characterized, and in some cases, the IHSSs were remediated through an accelerated action (Figure 4-1 and Table 4-1) Several IHSSs were also evaluated for NFAA based on historical data (see footnote 1 to Table 4-1) The IHSS groups investigated were characterized in accordance with the IA and BZ Sampling and Analysis Plans (SAPs) (DOE 2000 and 2002b) Accelerated actions occurred at nine IHSS Groups in FY 02 and 03 in accordance with the ER RSOP Summaries of the accelerated actions are provided in Table 4-2 Accelerated actions included soil, building slab, building footers, drains, and underground utilities removal, as well as removal of tanks and pipelines associated with the Original Process Waste Lines (OPWLs) (IHSS 000-121) Accelerated actions at four of the nine IHSS Groups included removal of OPWLs

50 SUMMARY OF PROPOSED STEWARDSHIP ACTIVITIES

To briefly summarize, accelerated action planning has included a long-term stewardship evaluation that examines the following criteria Additional details of this evaluation are presented in the ER RSOP Modification (DOE 2003a)

- 1 Proximity to Other Contaminant Sources When an IHSS Group is isolated from other contaminant sources, the need for additional remediation is considered because this could result in a reduction of potential future institutional/physical controls or monitoring requirements over large areas
- 2 Adequacy of Groundwater and Surface Water Protection Contaminant migration via surface soil erosion or subsurface soil leaching to groundwater are the two possible pathways whereby surface water could become contaminated by an IHSS. With respect to erosion, the stewardship evaluation examines the concentration of contaminants (typically radionuclides) in surface soil relative to both background concentrations and ALs (actinide concentrations less than the ALs may have a potential to impact surface water), proximity of the IHSS to surface water, and the slope of the land surface. The groundwater pathway evaluation considers the concentration of the analyte (typically VOCs) in the subsurface soil, whether the groundwater exhibits contamination that appears to arise from the IHSS, and whether a downgradient groundwater collection and treatment system exists (or will exists) to capture contaminant releases, if indeed there is potential for such a release. The stewardship evaluation may suggest additional soil removal beyond that which is necessary to meet the ALs in order to provide improved protection of surface water quality.
- 3 IHSS-Specific Future Monitoring Requirements This evaluation element examines reduction in the cost of long-term monitoring should additional remediation be implemented, and the need for additional monitoring to ensure contaminants are not migrating at concentrations that pose a threat to surface water quality
- The Need for Institutional Controls or Physical Controls This evaluation element examines the potential reduction or elimination of institutional controls (i.e., administrative measures that restrict access to residual contamination) or physical controls (such as fences and gates) should additional remediation be implemented

For the FY02/03 IHSS investigations and NFAA evaluations, a consistent set of institutional and physical controls were deemed to be necessary to address stewardship. These controls include the following near-term and long-term recommendations.

Near-Term Management Recommendations

Near-term recommendations for environmental stewardship included the following

- Excavation on Site will continue to be controlled through the Site Soil Disturbance Permit process, and
- Site access and security controls will remain in place pending implementation of long-term controls

Long-Term Stewardship Recommendations

Based on remaining environmental conditions at the IHSSs, no specific long-term stewardship activities were recommended beyond the generally applicable Site requirements that may be imposed on the IHSS areas in the future, which are dependent upon the final remedy selected. Controls that will be used as appropriate for the areas include the following

- Prohibitions on construction of occupied buildings,
- Restrictions on excavation or other soil disturbance,
- Fencing and signs restricting access, and
- · Prohibitions on groundwater pumping in the area

Additional measures were considered for stewardship at the Ash Pits (IHSS 133) At the Ash Pits, it was proposed that the groundwater monitoring network in the vicinity be evaluated between now and Site closure to determine its adequacy in detecting releases from the Ash Pits Accordingly, as part of the execution of the Calendar Year 2003 Well Installation and Sampling Project Work Plan (DOE 2003b), two groundwater monitoring wells were installed at the Ash Pits to further evaluate groundwater conditions at these IHSSs. The NFAA for the Ash Pits also proposed that a marker be placed near the southwestern corner of the western most Ash Pit to monitor bank erosion, if any, that may occur. This will be installed prior to closure.

All IHSSs, PACs and UBC sites will be evaluated as part of the Comprehensive Risk Assessment (CRA), which is included in the RCRA Facility Investigation/Remedial Investigation (RFI/RI) and Corrective Measures Study/Feasibility Study (CMS/FS) that will be conducted for the Site. The need for and extent of long-term stewardship activities will be reanalyzed in the RFI/RI and CMS/FS and will be proposed, as appropriate, as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, in any post-closure Colorado Hazardous Waste Act permit that may be required, and in any post-RFCA agreement

60 REFERENCES

DOE, 1993, Background Geochemical Characterization Report, Golden, CO, September

DOE, 1995 Geochemical Characterization of Background Surface Soils Background Soils Characterization Program, Golden, CO, May

DOE, 2000, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado

DOE, 2001, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS) Report Work Plan, Golden, Colorado, November

DOE, 2002a, Environmental Restoration Rocky Flats Cleanup Agreement Standard Operating Protocol (RSOP) for Routine Soil Remediation

DOE, 2002b, Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado

DOE, 2003a, Environmental Restoration Rocky Flats Cleanup Agreement Standard Operating Protocol (RSOP) for Routine Soil Remediation, Modification 1, September, 2003

DOE 2003b, Calendar Year 2003 Well Installation and Sampling Project Work Plan, GWINST-03 1-WP, September 2003

Table 4-1
FY02/03 IHSS Characterizations/Evaluations and Accelerated Actions

IHSS	OU	PAC	haracterizations/Evaluations and / Site Description	Data Summary (DS) or Closeout (C) Report for IHSS Group	NFAA Status
111 1	BZ	NE-111 1	Trench T-4	1	Approved 6-12-03
1114	BZ	NE-111 4	Trench T-7	1	Approved 6-12-03
216 2	BZ	NE-216 2	East Spray Field	DS for NE/NW	Proposed
216 3	BZ	NE-216 3	East Spray Field	DS for NE/NW	Proposed
NA	BZ	NE-1407	OU 2 Treatment Facility	DS for NE/NW	Proposed
NA	BZ	NE-1412	Trench T-12	DS for NE/NW	Proposed
NA	BZ	NE-1413	Trench T-13	DS for NE/NW	Proposed
174a	BZ, OU 10	NW-174a	PU&D Yard Container Storage Area	DS for NE/NW	Proposed
133 1	BZ	SW-133 1	Ash Pit 1	1	Approved 6-12-03
133 2	BZ	SW-133 2	Ash Pit 2	11	Approved 6-12-03
133 4	BZ	SW-133 4	Ash Pit 4	11	Approved 6-12-03
1702	BZ	SW-1702	Recently Identified Ash Pit (also referred to as TDEM-2)	1	Approved 6-12-03
101	IA, OU 4	000-101	Solar Evaporation Ponds	DS and C for 000-1	Approved 7-29-03
140	BZ	900-140	Hazardous Disposal Area	1	Proposed
148	IA, OU 13	100-148	Waste Leaks	C for 100-4&5	Approved 4-22-03
NA	IA CITTO	100-609	Security Incinerator	C for 100-4&5	Approved 4-22-03
128	IA, OU13	300-128	Oil Burn Pit No 1	C for 300-1	Approved 6-20-03
134N	IA, OU13	300- 134(N)	Lithium Metal Destruction Site	C for 300-1	Approved 6-20-03
171	IA, OU13	300-171	Solvent Burning Ground	C for 300-1	Approved 6-20-03
NA	IA	300-702	Pesticide Shed	DS for 300-6NA	Approved 7-21-03
NA	IA IA	400-802	Storage Shed South of Building 334	C for 600-2	Approved 6-19-03
NA	IA .	400-807	Sandblasting Area	DS for 400-10	Approved 7-15-03
NA	IA.	500-906	Asphalt Surface Near Building 559	DS for 500-6	Approved 7-16-03
NA	IA .	500-907	Tanker Truck Release of Hazardous Waste from Tank 231B	DS for 500-7	Approved 6-9-03
120 2	IA, OU 12	600-120.2	Fiberglassing Area West of Building 664	DS for 400-10	Approved 7-15-03
400-10	IA, OU 14	600-161	Radioactive Site West of Building 664	DS for 400-10	Approved 7-15-03
NA	IA	600-1001	Temporary Waste Storage Building 663	C for 600-1	Approved 6-24-03
NA	IA COLO	600-1005	Former Pesticide Storage Area	C for 800-4	Approved 5-15-03
150 6 150 8	IA, OU 8	700-150 6 700-150 8	Radioactive Site South of Building 779 Radioactive Site Northeast of Building	1	Proposed Proposed
MA	- AIA	700 1100	779		
NA 164 2	IA, OU 14	700-1106 800-164 2	Process Waste Spill - Portal 1 Radioactive Site 800 Area Site #2, Building 886 Spills	DS for 700-12 C for 800-4	Approved 5-15-03 Approved 5-15-03
164 3	IA, OU 14	800-164 3	Radioactive Site 800 Area Site #2, Building 889 Storage Pad	C for 800-6	Approved 3-25-03
NA	IA	800-1205	Building 881, East Dock	DS for 800-2	Approved 7-16-03
153	BZ	900-153	Oil Burn Pit No 2	DS for 900-2	Proposed 8-16-03
154	BZ	900-154	Pallet Burn Site	DS for 900-2	Proposed 8-16-03
165	IA, OU 6	900-165	Triangle Area	DS and C for 000-1	Approved 7-29-03
175	IA, OU 10	900-175	S&W Building 980 Contractor Storage Facility	DS for 900-4&5	Approved 7-23-03
176	IA, OU 10	900-176	S&W Contractor Storage Yard	DS and C for 000-1	Approved 7-29-03
NA	IA	UBC 123	Health Physics Laboratory	C for 100-4&5	Approved 4-22-03
NA	IA	UBC 371	UBC 371 - Plutonium Recovery	DS for 300-3&4	Approved 8-21-03
NA	IA .	UBC 374	UBC 374 - Waste Treatment Facility	DS for 300-3&4	Approved 8-21-03
NA	IA	UBC 776	Original Plutonium Foundry (TBD)	DS for 700-3	3
NA	IA	UBC 777	General Plutonium Research and Development (TBD)	DS for 700-3	3
NA	IA	UBC 881	UBC 881 - Laboratory and Office	DS for 800-2	Approved 7-16-03
NA	IA	UBC 886	UBC 886 - Critical Mass Laboratory	C for 800-4	Approved 5-15-03
NA	IA, OU 14	UBC 889	UBC-889 Decontamination and Waste Reduction	C for 800-6	Approved 3-25-03
NA	IA	PAC 100- 611	Building 123 Scrubber Solution Spill	C for 100-4&5	Approved 4-22-03

Table 4-2

I ADIC 4-2 Summon, of Domodistion Activities for EV02 and EV03						
IHSS Group	Summary of Remediation Activities for FY02 and FY03 Accelerated Action Summary					
ļ	A A A A A A A A A A A A A A A A A A A					
000-1	 Stabs removed (B788 and 788A, the Clarifler, and B308A) Associated building foundation footings and grade beams removed Class 6 roadbase under slabs removed and used as backfill within the IHSS Group The slab and retaining wall for the concrete mixer removed Concrete pipe supports and power poles removed 					
	 The silo foundation pad and dry bulk storage facility removed and placed on the Building 980 concrete rubble pile to be recycled Various sections of waste lines tapped, drained, and then removed, including sections of the OPWL (IHSS 121) less than three feet below the surface (all sections within the berms, and the above-ground pipeline from Building 910 to Building 374) Over 800 linear feet of OPWL remain, mostly beneath a depth of 4 feet Two small sections of the reverse osmosis line removed 					
	 1,200 linear feet of above-ground line (part of RCRA Unit 374 3 [the NPWL] removed The MST return line disrupted and filled with grout Two lines on the eastern side of Pond 207B North disrupted, the valve assemblies removed, and both ends of the lines grouted The 					
	sections going to the pond removed					
	 Valve Pit #1 removed, and lines associated with the pit either removed or filled with grout. The two valve pits in the Pond 207B berms not removed because they were more than six feet below grade. However, the valve stems and casings removed. The Pond 207A, 207B and 207C drain/leak detection lines disrupted and filled with grout or foam. The discharge ends of the 207B and 207A lines removed. Five associated sumps removed, as well as the submersible pumps contained in each sump. Numerous. 					
	lysimeters in the area removed Soils associated with the six hot spots removed. An area approximately 1 square meter down to 0.5 foot depth excavated from each of					
	the areas • Asphalt in the area removed					
100-4&5	 The Building 123 slab and footers removed Cesium-137 source well removed 					
	 Manhole (MH)-1 and MH-2 and the concrete slabs beneath the manholes removed OPWL P1 and P2 removed from beneath the building footprint 					
	Sumps located in the former Rooms 156, 157, and 158 along with more than 1 foot of soil around and beneath the sumps removed Pipelines between former Rooms 156 and 157 sump locations and more than 1 foot of soil around and beneath the pipelines removed					
	 Approximately 40 feet of associated 4-inch-diameter stainless steel pipeline removed Two 10-foot sections of steam piping with asbestos-containing insulation found beneath the northeastern section of the slab removed Unanticipated pipeline found beneath the northern section of the slab, south of the sumps removed A sheet of lead (about 2' x 3' x 1/8" thick) encountered beneath an 8-inch diameter drain removed 					
	An approximately 4' x 4' x 4' x 6' section of subsurface lead-contaminated soil and an approximately 5'x 5' x 3' section of SVOC-contaminated soil removed					
	 Two OPWL segments (one on the south side and one on the east side) not removed because of logistical constraints. The pipeline ends grouted and will be addressed later as part of IHSS 000-121 remediation. 					
300-1	 Building 335 slab and foundation walls, as well as two exterior equipment slabs, a corrugated-metal sump, and electric lines removed All lines connected to the floor drains removed 					
600-1	The Building 662 and Building 663 concrete slabs (and 662 footer) as well as two slabs east of IHSS Group 600-1 and several small slabs west of Building 663 removed Solida and the first several small slabs west of Building 663 removed.					
	 Soil to a depth of 4 5 feet over an approximately 20 feet by 30 feet removed All structures and piping beneath Building 662 and Building 663 slabs removed, including a sanitary drain, electrical conduit and wires beneath the Building 662 slab and a series of electrical utilities adjacent to Building 663, and a presumed septic system (tile drain) beneath the western east slab 					
600-2	Trailers T452G, T452F, T452B, and T452A slabs removed (by RISS D&D)					
800-2	OPWLs at Bld 887 and between Bld 887 and Bld 881 removed during D&D by building personnel (ER Data Summary Report only) 20 feet of pipeline remains in this area but will also be removed.					
800-4	Building 886 slab removed (by RISS D&D) Tank T-27 (one 500-gallon steel tank) removed in 1989, and Tanks T-21 (250-gallon Sump) and T-22 (two 250-gallon steel tanks) and associated OPWL removed by RISS D&D					
800-6	 The Building 889 slab as well as the footer walls, footers, and portions of the concrete pillars (i e , the top 5 ft) removed 					
	 Underground utilities (e.g., utility alarm, communication, and electric lines) removed Two large transite air ducts removed (approximately 40 ft) The tank/sump located beneath the eastern portion of Building 889 removed 					
	 Tank 28 (two 1,000-gallon concrete sumps), Tank 40 (two 400-gallon underground concrete tanks), and OPWL P-10 (under the Bid 889 slab, the portion going to Tank 40, and the portion going to a point southwest of Valve Vault 4) removed. The pipeline end grouted 					

